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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

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Group Art Unit: 1616

Examiner: Neil Levy

Serial No.: 09/326,014

Atty. Dkt. No.: MOAR:100---/KAM
11897.0100.CPUS00

Filed: June 4, 1999

For: Particles Containing Agricultural Active
Ingredients

RESPONSE TO FINAL OFFICE ACTION DATED JUNE 25, 2001

Box AF

Commissioner for Patents

Washington, D.C. 20231

Sir:

This paper is submitted in response to the Final Office Action dated June 25, 2001 for which the two-month date for response is **August 25, 2001**.

RESPONSE TO OFFICE ACTION

Rejection under 35 U.S.C. 103(a)

The instant claims have been rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Stock (Abstract, 1996), Capuzzi et al. (EP 0 729 700), Schaub (U.S. Patent

4,664,696) and Lo (U.S. Patent 5,725,869) or Tsuei et al (U.S. Patent 5,589,194). Specifically, the Examiner contends that it would have been obvious to a person of skill in the art at the time the invention was made, desiring to utilize triazole fungicide composition, with adjuvants in forms to provide acceptable application over time, to use either Stock or Capuzzi for examples of triazoles, and to use Schaub, Lo or Tsuei to provide controlled release as taught by Kanda. Applicants respectfully traverse.

The Stock reference is an abstract of a conference presentation wherein the effects of formulation activity of foliar-applied pesticides is reviewed. Topics reviewed include microencapsulation and also methods of improving penetration. Stock makes the general statement that microencapsulation lowers toxic potential, reduces volatility and improves persistence. The Stock reference does not teach for which compounds this finding applies. Further, the Examiner is directed to page 17, line 4 of the instant specification, where it is disclosed that “The particles of the present invention differ from “microcapsules,” in which a polymeric shell surrounds a liquid or solid core that contains an active ingredient.”

Stock also teaches that penetration of fluquinconazole, a compound of the instant claims, into vine is enhanced by the presence of a surfactant (Synperionic). The instant claims are not directed to the improvement of penetration by the presence of surfactant, therefore, this teaching is irrelevant with respect to instant claims.

Capuzzi *et al.* is primarily concerned with adjuvants for fungicidal microemulsions. The Capuzzi reference suggests that several of the fungicides of the instant claims exhibit the common property that their activity is enhanced by the adjuvant disclosed therein when they are formulated as microemulsions. That disclosure holds no relevance to the present invention

which is concerned, not with microemulsion compositions, but rather with a solid particle comprising a polymer matrix and a triazole fungicide entrapped in the polymer matrix.

The Schaub reference is directed to specific triazole compounds that are useful as plant fungicides. The synthesis of the compounds is discussed, as well as general formulations comprising the compounds. Schaub does not suggest a solid particle comprising a polymer matrix and a triazole fungicide entrapped in the polymer matrix.

The Lo reference is directed to controlled release compositions in the form of microspheres. The author suggests that the composition can be used for controlled release of chemicals including pharmaceuticals, cosmetics, fragrances, insecticides, pesticides, herbicides, bacteriocides, and fungicides. There is no teaching to use the method of Lo with a triazole fungicide.

The Tsuei reference is directed to microcapsules prepared by dissolving an active component in a solid matrix-forming material that has been thermally softened. Biocides are listed in the types of components that can be encapsulated in the microcapsules. There is no suggestion in Tsuei to encapsulate a triazole fungicide.

The Kanda reference discloses active agents bound within microparticles. The active agents include bacteriocides, fungicides, antiseptics, insecticides, herbicides, and anti-fouling agents. There is no suggestion in Kanda to use a triazole fungicide.

Unexpected results are afforded by the presently claimed invention.

In contrast to the above references, the instant application is directed to a particle comprising a triazole fungicide dispersed in a polymer matrix. Many of the triazole fungicides are highly phytotoxic to the very plants species they are meant to protect (See page 2, line 8 - page 3, line 2 of the specification). Prior to the present disclosure, it would have been expected

that these triazole fungicides would be phytotoxic, even when applied to seeds or plants using a time release method of delivery. For example, it would have been expected that once the active agent was released, the phytotoxic effect would then occur. The examples in the instant specification clearly demonstrate, however, that a microparticle comprising a triazole fungicide entrapped in a polymer matrix is less phytotoxic than the same triazole fungicide applied directly to seeds and plants. For instance, Example 9 shows the phytotoxic effect of cyproconazole when used as a seed treatment for wheat. A commercial fast release formulation of cyproconazole (Alto 005LS) shows marked phytotoxicity 10 days after application. With an application of 16 gm of cyproconazole per 100 kg of seed, the height of the treated plant is reduced to 7.8 % the height of an untreated control. Contrarily, plants treated with cyproconazole dispersed in the particle matrix, according to the present invention, maintained 87.1 % of the control plant height (Fig. 3).

Of the references cited by the Examiner, three mention triazole fungicides: Stock, Capuzzi, and Schaub. Neither of these references suggest the desirability of controlled release of the triazole fungicide, much less the desirability a solid particle comprising a polymer matrix and a triazole fungicide entrapped in the polymer matrix. As discussed above, Stock and Capuzzi are concerned with the effect of adjuvants on the activity and uptake of the active component, while Schuab is concerned with specific novel triazole fungicides.

The remaining references; Lo, Tuei, and Kanda, are concerned with delivery methods for various agents, including pesticides, pharmaceuticals, anti-fouling agents and cosmetics. The mere fact that fungicides are included in this list of possible agents should not be construed to suggest that these references: 1) suggest the desirability of a solid particle comprising a polymer matrix and a triazole fungicide entrapped in the polymer matrix; 2) provide motivation to

combine any of the references cited by the Examiner; or 3) suggest that such a combination would have a reasonable probability of success. Specifically, the references do not suggest the safening affect of a triazole fungicide entrapped in the polymer matrix.

To support a *prima facie* case of obviousness, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947, F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Further, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). The Examiner has failed to point to any evidentiary support (prior art documentation, sworn affidavit, etc.) for his assertion that it would have been obvious to use delivery methods taught by Schaub, Lo, or Tsuei to deliver fungicides as taught by Stock or Capuzzi. *In re Zurko*, No 96-1258 (Fed. Cir. 2001).

Non-obviousness can be supported either by evidence that the prior art is sufficiently broad and does not motivate selection of the claimed invention, or by proof that the claimed invention exhibits unexpectedly unique properties. *In re Baird*, 16 F.3d 380, 383, 29 U.S.P.Q.2d 1550, 1552 (Fed. Cir. 1994), *In re Jones*, 958 F.2d 347, 350, 21 U.S.P.Q.2d 1941, 1943 (Fed. Cir. 1992), *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987). Applicants have shown that the presently claimed invention affords unexpected results. It would not have been expected that the phytotoxic triazole fungicides of the present invention would be safened when applied to plants or seeds as a particle comprising a triazole fungicide dispersed in a polymer matrix.

Applicants therefore respectfully request that the rejection under 35 U.S.C. § 103 (a) be withdrawn.



CONCLUSION

The Examiner is encouraged to call the undersigned should any further action be required. Should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason, the Commissioner is authorized to deduct said fees from Deposit Account No. 01-2508/11897.0100.CPUS00.

Respectfully submitted,

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